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| 10/014,892 | 11/09/2001 | William R. Crumly | M - 2 | 2394 |

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1753

DATE MAILED: 06/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|--------------------------------------|--------------------------------------|--|
| Office Action Summary | Application No. 10/014,892 | Applicant(s) CRUMLY ET AL. | |
| | Examiner ALEX NOGUEROLA | Art Unit 1753 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-42 is/are pending in the application.
4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2,4-7,9-11,13-15,17-25,27,29-33,35,36,40 and 41 is/are allowed.
- 6) ☒ Claim(s) 1,39 and 42 is/are rejected.
- 7) ☒ Claim(s) 1,3,8,12,16,26,28,34,37-39 and 42 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>01082003</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: elements "10" and "17" are not in Figure 5 as described in the last paragraph on page 7 of the specification.
2. Appropriate correction is required.

Claim Objections

3. Claims 1, 3, 8, 12, 16, 26, 28, 34, 37-39, and 42 are objected to because of the following informalities:
 - a) Claim 1, line 7: "a" should be replaced with -- an --;
 - b) Claim 1, line 14 -- an -- should be inserted between "at" and "area";
 - c) Claim 3, line 2: -- , -- should be inserted between "chloride" and "and/or";
 - d) Claim 3, line 3: -- , -- should be inserted between "iridium" and the first occurrence of "and";
 - e) Claim 8, line 2: -- , -- should be inserted between "chloride" and "and/or";
 - f) Claim 8, line 3: -- , -- should be inserted between "iridium" and the first occurrence of "and";
 - g) Claim 12, line 2: -- , -- should be inserted between "chloride" and "and/or";

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- h) Claim 12, line 3: -- , -- should be inserted between "iridium" and "and";
- i) Claim 16, line 2: -- , -- should be inserted between "chloride" and "and/or";
- j) Claim 16, line 3: -- , -- should be inserted between "iridium" and the first occurrence of "and";
- k) Claim 26, line 12: -- the -- should be inserted between "and" and "electrode";
- l) Claim 26, line 12: -- having -- should be inserted between "and" and "a";
- m) Claim 28, line 2: -- , -- should be inserted between "chloride" and "and/or";
- n) Claim 28, line 3: -- , -- should be inserted between "iridium" and the first occurrence of "and";
- o) Claim 34, line 2: -- , -- should be inserted between "chloride" and "and/or";
- p) Claim 34, line 3: -- , -- should be inserted between "iridium" and the first occurrence of "and";
- q) Claim 37, line 9: -- the -- should be inserted between "and" and "electrode";
- r) Claim 37, line 12: -- having -- should be inserted between "and" and "a";
- s) Claim 38, line 2: -- , -- should be inserted between "chloride" and "and/or";
- t) Claim 38, line 3: -- , -- should be inserted between "iridium" and the first occurrence of "and";
- u) Claim 42, line 2: -- , -- should be inserted between "chloride" and "and/or"; and
- v) Claim 42, line 3: -- , -- should be inserted between "iridium" and the first occurrence of "and."

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4. Note that dependent claims will have the deficiencies of base and intervening claims.
5. Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 39 and 42 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention:

Claim 39 recites the limitation "the circuit feature" in line 3. There is insufficient antecedent basis for this limitation in the claim.

8. Note that dependent claims will have the deficiencies of base and intervening claims.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Aldinger et al.

(US 5,308,469), hereafter "Aldinger."

Aldinger teaches a chemical sensor package comprising

- a. a substrate (Drawing 3) having a front surface and a back surface facing generally away from one another which surfaces extend generally in a common plane and which is comprised of a first non-conductive layer (3,3') and a second non-conductive layer (1,1') the first layer being on the side of the substrate closer to the front surface of the substrate;
- b. an electrically conductive trace (4) extending in the plane of the substrate over an area in between the first and second substrate layers and having a front side facing toward the front surface of the substrate, the trace having a three-dimensional conductive circuit feature (7) formed integrally therewith and projecting at least partly through the second non-conductive layer and outwardly of the back surface of the substrate for providing a readily connectable and disconnectable pressure interconnection to another element at one side of the substrate;
- c. a sensing electrode (5,5') overlying the trace at an area of trace between the first and second substrate layers and having a front side facing toward the front surface of the substrate and a back side facing toward the back surface of the substrate, the electrode being in electrical contact with the trace; and

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- d. a well (12) extending into the substrate from the front surface to the front side of the electrode and being exposed to the front side of the electrode.

Applicants should note

a) that although the first and second layers of Aldinger are ionically conductive, they are not electrically conductive as evidenced by the CAPLUS abstract of Hobbs, "DGO formation by lateral oxidation," *IP.com Journal* (2002), 3(11), 2 (No. IPCOM000008808D), 15 July 2002); col. 7, ll. 44-56 of Carnahan et al. (US 3,768,259), and the zirconium oxide entry in *Hawley's Condensed Chemical Dictionary*, 14th edition, 2002, John Wiley & Sons, Inc. Indeed, if the layers of the substrate were electrically conductive the sensor package would be inoperative because it would have a built-in short-circuit; and

b) limitation (d) of Applicant's claim allows for the well to be in another layer of the substrate than the first non-conductive layer or the second non-conductive layer.

Allowable Subject Matter

11. Claims 3, 8, 12, 16, 26, 28, 34, 37-39, and 42 are objected to (see the claim objections above) but would be allowable if rewritten as to overcome the objections. Note that dependent claims will have the deficiencies of base and intervening claims.

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12. Claims 2, 4-7, 9-11, 13-15, 17-25, 27, 29-33, 35, 36, 40, and 41 are allowed.

13. Claims 39 and 42 would be allowable if rewritten to overcome the rejection under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

14. The following is a statement of reasons for the indication of allowable subject matter:

a) Claim 2: the nonobvious limitation in the combination of limitations is the requirement of "a non-conductive overlay overlying and secured to the upper face of the foil and the upper side of the electrode and having an upper surface remote from the foil and electrode."

In Aldinger the non-conductive overlay (2') overlies and is secured to the upper face of the foil (4'), but the overlay does not overlie the upper face of the electrode. Instead the overlay is in side-by-side contact with the electrode. Additionally, Claim 2 requires the foil to be made of copper. In Aldinger the foil is made of platinum. It would not have been obvious to substitute copper for platinum in Aldinger's sensor, as Aldinger's sensor is an oxygen sensor, so such a substitution would produce a sensor subject to unwanted oxidation reactions, which would introduce inaccuracies in the oxygen measurements or even render the sensor inoperative.

In Brown et al. (US 5,607,566) the non-conductive overlay (25) overlies and is secured to the upper face of the foil (23), but the overlay does not overlie the upper face of the electrode and the upper surface of the overlay is not remote from the electrode.

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Instead, the overlay is in side-by-side contact with the electrode and the overlay is partially directly covered by the electrode.

In Pfab et al. (US 5,018,527) the non-conductive overlay ((95), Figure 15) overlies and is secured to the upper face of the foil (101), but the overlay does not overlie the upper face of the electrode (98);

b) Claims 3-5 depends from allowable claim 2;

c) Claim 6: the nonobvious limitation in the combination of limitations is the requirement of "a non-conductive overlay overlying and secured to the upper face of the foil and the upper side of the electrode and having an upper surface remote from the foil and electrode."

In Aldinger the non-conductive overlay (2') overlies and is secured to the upper face of the foil (4'), but the overlay does not overlie the upper face of the electrode. Instead the overlay is in side-by-side contact with the electrode;

d) Claims 7-10 and 15-25 depend directly or indirectly from allowable claim 6;

e) Claim 11: the nonobvious limitation in the combination of limitations is the requirement of "a non-conductive overlay overlying and secured to the upper face of the foil and the upper side of the electrode and having an upper surface remote from the foil and electrode."

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In Aldinger the non-conductive overlay (2') overlies and is secured to the upper face of the foil (4'), but the overlay does not overlie the upper face of the electrode. Instead the overlay is in side-by-side contact with the electrode;

f) Claims 12-14 depend directly or indirectly from allowable claim 11;

g) Claim 26: the nonobvious limitation in the combination of limitations is the requirement of "overlying the upper face of the foil and the upper side of the electrode with a non-conductive overlayer, the overlayer having an upper surface remote from the foil and [the] electrode"

In Aldinger, as seen from Figures 1-3, the non-conductive overlayer (2,2') is formed so that it does not overlie the electrode (5,5'), but fits side-by-side with the electrode, closely encircling the electrode.

In Brown et al. (US 5,607,566) the electrode (26) is formed after the non-conductive layer (25), is not overlaid by the non-conductive layer, and is not remote from the upper surface of the non-conductive layer, as the electrode partially covers the upper surface of the non-conductive layer.

In Pfab et al. (US 5,018,527) the electrode ((98), Figure 15) is formed so as to only in side-by-side contact with the non-conductive layer (95).

h) Claims 27-31 depend directly or indirectly from allowable claim 26;

i) Claim 32: the nonobvious limitation in the combination of limitations is the requirement of "laminating a non-conductive coverlayer onto the upper surface of the foil and of the electrode on the mandrel, the non-conductive coverlayer having a lower surface adjacent the upper face of the foil and an opposed upper surface and having an opening therethrough at the location of the electrode, whereby to form a well extending from the upper surface of the cover layer to the upper surface of the electrode."

In Crumly et al. (US 5,364,277) the electrode (44) is formed after the non-conductive layer (72), the non-conductive coverlayer is formed so as to be underneath the upper surface of the electrode, and the well (which is above element (32) in Figure 7) is formed so that it extends from approximately the lower surface of the non-conductive coverlayer to the upper surface of the electrode, which is above the upper surface of the non-conductive coverlayer;

j) Claims 33-36 depend directly or indirectly from allowable claim 32;

k) Claim 37: the nonobvious limitation in the combination of limitations is the requirement of "overlaying the upper face of the foil and the upper side of the electrode with a non-conductive overlayer, the overlayer having an upper surface remote from the foil and [the] electrode"

In Aldinger, as seen from Figures 1-3, the non-conductive overlayer (2,2') is formed so that it does not overly the electrode (5,5'), but fits side-by-side with the

electrode, closely encircling the electrode. Additionally, Claim 37 requires the foil to be made of copper. In Aldinger the foil is made of platinum. It would not have been obvious to substitute copper for platinum in Aldinger's sensor, as Aldinger's sensor is an oxygen sensor, so such a substitution would produce a sensor subject to unwanted oxidation reactions, which would introduce inaccuracies in the oxygen measurements or even render the sensor inoperative.

In Brown et al. (US 5,607,566) the electrode (26) is formed after the non-conductive layer (25), is not overlayed by the non-conductive layer, and is not remote from the upper surface of the non-conductive layer, as the electrode partially covers the upper surface of the non-conductive layer.

In Pfab et al. (US 5,018,527) the electrode ((98), Figure 15) is formed so as to only in side-by-side contact with the non-conductive layer (95);

l) Claims 38, 39, and 42 depend directly or indirectly from allowable claim 37;

m) Claim 40: the nonobvious limitation in the combination of limitations is the requirement of "laminating a non-conductive coverlayer onto the upper surface of the foil and of the electrode on the mandrel, the non-conductive coverlayer having a lower surface adjacent the upper face of the foil and an opposed upper surface and having an opening therethrough at the location of the electrode, whereby to form a well extending from the upper surface of the cover layer to the upper surface of the electrode."

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In Crumly et al. (US 5,364,277) the electrode (44) is formed after the non-conductive layer (72), the non-conductive coverlayer is formed so as to be underneath the upper surface of the electrode, and the well (which is above element (32) in Figure 7) is formed so that it extends from approximately the lower surface of the non-conductive coverlayer to the upper surface of the electrode, which is above the upper surface of the non-conductive coverlayer; and

n) Claims 41 depends from allowable claim 41.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEX NOGUEROLA whose telephone number is (571) 272-1343. The examiner can normally be reached on M-F 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, NAM NGUYEN can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Alex Noguerola
Primary Examiner
AU 1753
June 17, 2004